

Red Rock Canyon Conservation Area Environmental Education Program

Adapt Or Die!

Field Program

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Grade	Third
Subject	Adaptations of plants and animals of the Mojave Desert.
Theme	Plants and animals of the Mojave Desert share the same pressures but have unique and beautiful ways of adapting to this harsh environment. Unfortunately many desert plants and animals are not able to adapt fast enough to recent man-made changes.
Goal	To foster an appreciation for the incredible ways in which plants and animals have adapted to life in the harsh, extreme environment of the Mojave Desert.
Curriculum	Science (4) 1-4.5
Objective	<p>The Student will be able to:</p> <ul style="list-style-type: none">• Identify at least two natural pressures that desert plants and animals have had to adapt to in order to survive.• Describe how adaptations help plants and animals survive in their habitats.• Identify two recent changes in the environment that plants and animals cannot adapt to fast enough.• Identify one way in which they can help conserve desert wildlife

Vocabulary

Adaptation- a *physical* or *behavioral* feature of an animal or plant that helps it to survive in its environment.

Diurnal- active during the day

Nocturnal- active at night

Hibernation- a state of inactivity/sleep found in some animals during the winter

Estivation- a state of inactivity/sleep used by certain animals during the summer

Exothermic- having a body temperature that is dependent on the surrounding environment (cold blooded)

Endothermic- having a body temperature that is independent of the temperature of the environment (warm blooded)

Materials/ Supplies

Worksheet

Animal cards

Clip board

paper cups for storing food items

Adaptations: spoons, chopsticks, forks, tweezers, clothespins,

Food categories: toothpicks, marbles, plastic beads of different sizes and shapes, toothpicks

Background

An adaptation is a physical or behavioral feature of a plant or animal that helps it survive in its habitat. Adaptations can either develop over a very long time or reacting to a new situation. Desert animals have amazing ways of surviving in the desert. They have had thousands of years to adapt to high temperatures, little rain, lack of cover and strong winds. Humans also adapt to living in the desert by using behavioral adaptations.

Some desert residents that are well adapted for life in the desert, such as the desert tortoise, have not been able to adapt to recent man-made changes in their environment. When changes occur rapidly animals or plants may not be able to adapt quickly enough. The list below covers some reasons tortoises are considered an at risk species and are protected as a threatened species: illegal collecting, vandalism, disease URD, release of captive torts, attacks by domestic and feral dogs, predation by ravens, urban growth- take away their homes, landfills and illegal dumping of hazardous materials, fire, livestock grazing, highways/roads and rail roads, off road recreation vehicle activities, mining, military activities.

Pre-site Activity

Have student complete the **Adaptations and Humans Worksheet** and discuss in the classroom prior to coming on the field trip.

Introduce and define “Adaptation”. Give examples of physical (how something is made) and behavioral adaptations (how something responds).

Activity Shoe Tying experiment

Have the students untie their shoes and then try to retie them with out being able to use their thumbs. Be on the lookout for cheaters! How many were able to retie their laces without using their thumbs? Explain that the opposable thumb is a physical adaptation. What other adaptations do humans have? Explain that many human adaptations on behavioral. Have the students list ways that humans adapt to living in the desert.

Activity Adaptation Feeding Experiment

Some animals have specialized features for collecting/gathering food, (List some common desert animals and their adaptations). Through this experiment students will learn that different adaptations for feeding allow many animals to live in the same area.

Procedure

Discuss the importance of adaptations and have the students list different types of feeding adaptations (type of mouth, food preference, when something is active looking for food). You may also want to go over the vocabulary list enclosed with the lesson plan.

Identify the boundary of the activity area, and the “adaptations”. Tell them they are looking for food and must use their “adaptation” and not their hands to collect as many food items as possible. (Not all the adaptations will be good for collecting all the food types so they may go after food items best suited for their adaptation bring this up at the end to reinforce behavioral adaptation)

Disperse the food items on the pavement or classroom floor. Let the students collect until all the food items have been gathered then have them count how many food items each individual was able to collect and have them complete the worksheet or discuss as a class depending on time constraints.

Activity Those Amazing Adaptations

Split the students up into groups of 4-6 depending on the size of the class. Assign each group a desert animal found in the Red Rock Visitor Center Museum (bat, bird of prey, torts, desert bighorn sheep, owls, snake, kit fox, spiny lizard, Wilson's warbler, mourning dove). Then have the students locate their animal and complete the **Adaptation Scavenger Hunt Worksheet**. Remind them to keep in mind that these are desert animals and they have physical and behavioral adaptations.

Once all the groups have completed their worksheets have them meet in the Friends room. Two people from each group will be commentators and interview their group on the amazing adaptations found in their animal. The interview should last a couple of minutes.

Activity Visit the tortoise habitat.

Discuss the adaptations of the Desert Tortoise to the Mojave Desert and specifically to Red Rock Canyon.

Activity Quick Freeze Critters

Split the students up into predator (the hunter) and prey (the hunttee) animals – example coyote / rabbit. One predator (student) per every 6 prey (students)

Explain that one end of the lower parking lot is the Primary Shelter and the other end is Food represented by Tokens.

The 4-5 chalk circles in the middle also represent Shelter.

The prey start at the primary shelter end. Their goal is to move from the primary shelter to the food source, and back collecting one token each trip.

To Survive the prey must collect 3 food tokens.

While working their way from food to shelter the prey (rabbits) need to be on the alert for predators (coyote). If they spot a coyote they can use the following behaviors to survive:

Warn others that danger is near by thumping feet

Freeze at any time a predator is within 5 feet or run for shelter

Start the game with all prey in the shelter area. Predators can start the game anywhere in the open area. Predators capture prey by tagging (No hitting) prey. Captured prey are to be taken to the sideline by the predator.

Whistle to start/stop the game.

Materials

3 Food Tokens per student

Color tags to distinguish predators from prey

4- 5 hula hoops or chalk to make circles

Post-site Activity

Tort Pen-pals

Write a letter to the Desert Tortoise - an animal well adapted for life in this harsh environment. The tortoises love to learn how other animals survive in the desert so describe what you have learned about adaptations. Address one of the following:

- 1) What pressures impact desert animals and how do adaptations help them survive.
- 2) In your own words describe what a behavioral adaptation or physical adaptation is and give two examples.
- 3) Draw a picture demonstrating a pressure faced by a desert animal and the adaptation that helps it survive

Criteria for a Successful Letter:

- 1) Use and spell correctly at least one of the vocabulary terms
- 2) Clear handwriting

Conclusion: Reinforce that adaptations help animals to survive and some animals are better adapted for desert life than others.

Feeding Station Experiment

Name_____

School_____

1. What was your adaptation? Circle one.

Clothespins

Large Chopsticks

Small Chopsticks

Fork

Spoon

Other

1. Sort the food items into the groups listed below and give your total for each.

Rope_____ Toothpicks_____ Beads_____

Glass_____ Eyes_____

1. Was your adaptation better at collecting a particular food item?

1. Did you change the way you used your adaptation during the activity? If so Why?

Did you go after a certain type of food?

Those Amazing Adaptations Worksheet

Name(s): _____

Your Animal: _____

Look closely at your animal. What features do you see that might help it survive in the desert?

What type of skin does it have and how might this help the animal?

What is the coloring? Any patterns? How could this help the animal?

Does it have a specialized tail? Why?

What do you think it eats and why?

When do you think it is active? And why?

Does your animal have any unusual adaptations?

Draw a picture of your animal

Adaptation Worksheet
Classroom
Pre Site Activity

Name_____

School_____

How Do Humans.....

1. Obtain food and water in the desert?

2. Build a home?

3. Protect themselves or adjust to the heat?

4. Protect themselves from the sun?

5. Travel across the desert?

Go through each response and place an **A** if it is an adaptation, then a **B** for a behavioral or a **P** for a physical adaptation